RACK-3030 CTI CHASSIS
USER'S MANUAL
Ver 2.0

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Chapter 1 Product Information

1.1 General Information

Rack-3030 is our new CTI chassis designed specially for Industrial Computer and Telephony application. Built-in fault detection, alarm notification capabilities, to name some of the special features of the product. These special features will prevent your system from shutting down without prior notice.

The fault detection and alarm notification can detect the temperature of CPU, chassis, speed of the fan, fan failure, power failure conditions .

Rack-3030 is designed to work in harsh environment, it will withstand shock, vibration, and a wide range of operating temperatures. The chassis is equipped with 4 cooling fans for air inlet in the front and 2 cooling fan for air outlet in the both side to ensure a good cooling system for full loading in Telephony system.

1.2 Product Specifications

General specification

- Chassis : 19” Rack mount , 6U 20-slot.
- Construction : Heavy-duty steel.
- Cooling Fan : 4 Fan (92x92mm) front remove & air inlet.
  2 Fan(60x60mm) side remove & air outlet.
  Ball bearing.
- Disk Driver : 2 Types of devices cages(big cages & small cage).
  Two big cages for 2 devices of 5.25” or 4 devices of 3.5”.
  One small cage for 3 devices of 3.5”.
- Indicator : Two LED- fan failure & power on.
- Speaker : Buzzer.
- Temperature sensor: Case & system.
- Maintenance : Desktop with rubber foot.
  Bottom cover can be removed with maintenance opening.
- Dimension : W431(481.8)xD520xH267 mm

Backplanes

We provide variant of backplanes to be applied with the Rack-3030 depends or your demands: BP-20S, BP-20SD, BP-20ST, BP-20SQ, PCI-18SD, PCI-19S, PX-19S, PX-20S, PX-20S2.

Power Supply

The Rack-3030 comes with our ACE-935A– the Single Power Supply or with the Horizontal type Redundant Power Supply of ARH-6400F(for ATX) or ARH-4400F(for AT). See Chapter 5 for the detail description of the power supply.

Working Environment

- Operating Temperature	:	0~50°C
- Relative Humidity	:	5~95% Relative
- Vibration	:	5-17 Hz, 0.1" double amplitude displacement
		17-500 Hz, 1.5G acceleration peak to peak
- Shock	:	10G acceleration peak to peak

1.3 Mechanical Dimension

Figure 1.1 and figure 1.2 below show the dimension of the Rack-3030

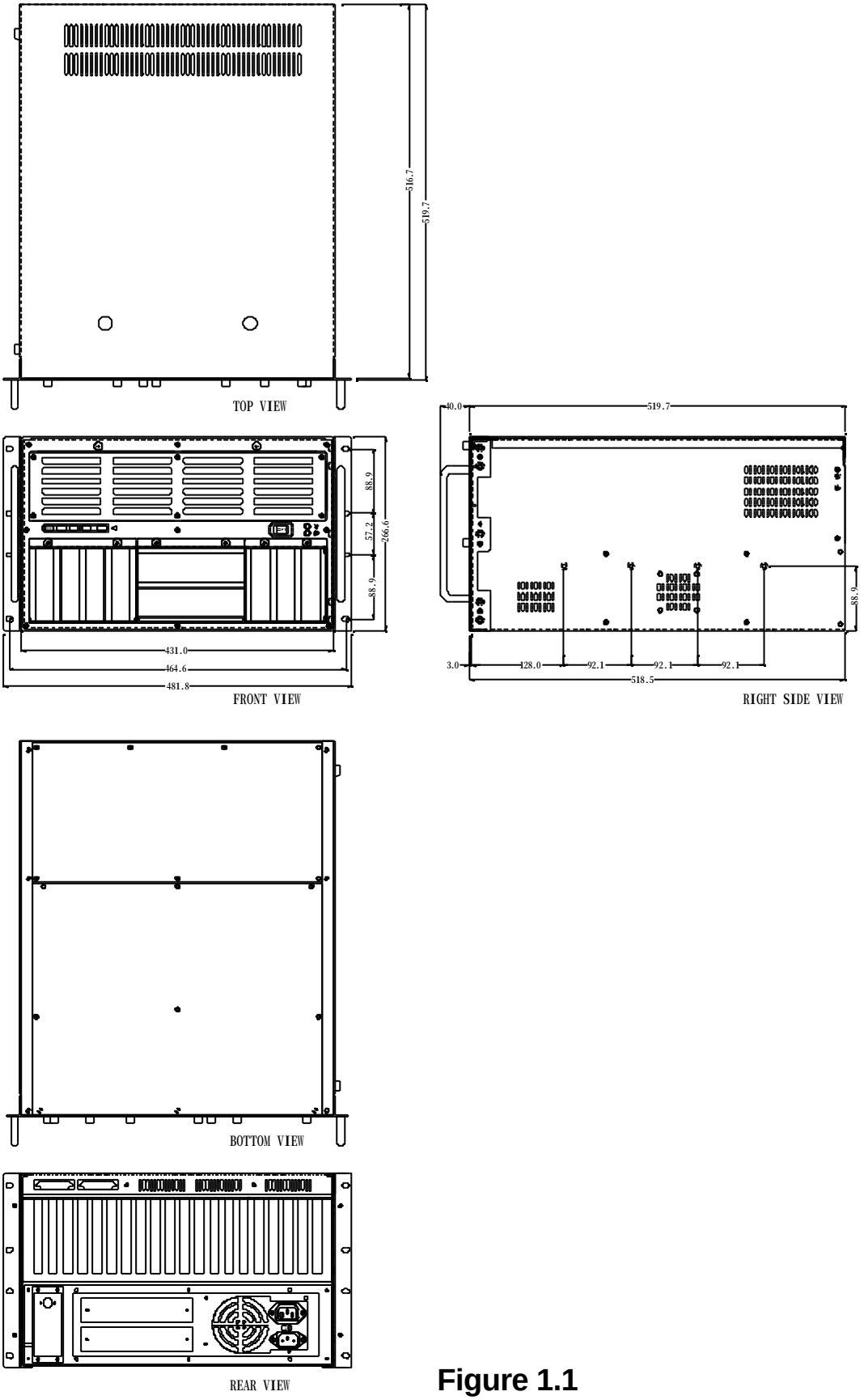


Figure 1.1

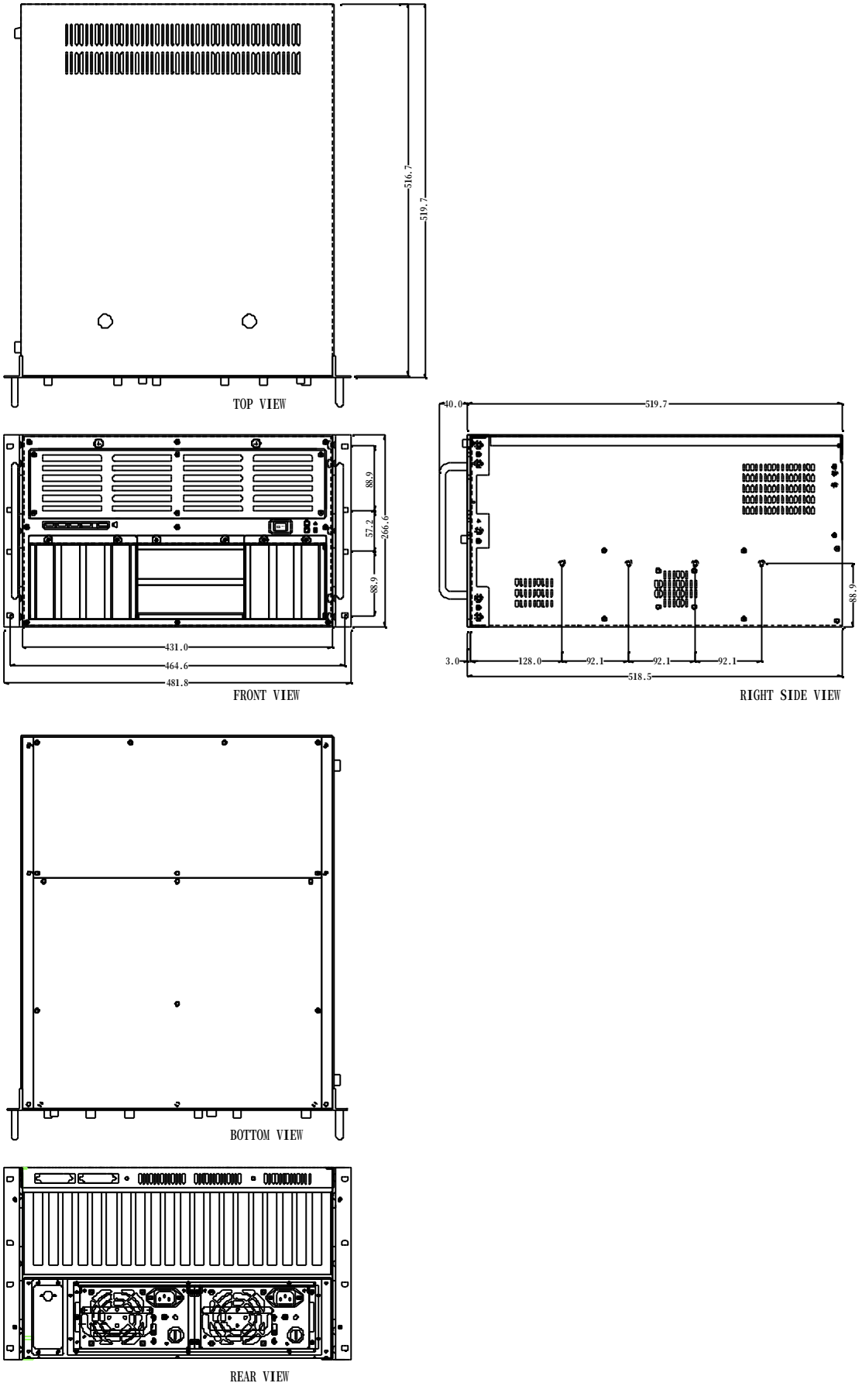

516.7
519.7
TOP VIEW
88.9
57.2
266.6
88.9
431.0
464.6
481.8
FRONT VIEW
40.0
519.7
88.9
3.0
128.0
92.1
92.1
92.1
518.5
RIGHT SIDE VIEW
BOTTOM VIEW
REAR VIEW

Figure 1.2

Chapter 2 Installation Procedure

To install the Rack-3030, please read this chapter carefully and prepare all the cards that you would like to install in the chassis to save time.

The control panel functions of Rack-3030 include Rocker Switch for Power ON/OFF, System Reset (3 reset for options) , Buzzer ON/OFF, and Two LED indicators: Fan failure for one of four fan, Power On to monitor the system' s status.

To set up the system, please follow the steps below:

2.1 Removing the chassis cover

The cover is mounted by 2 captive screws at the front of the chassis, remove them by push the sink pool and slide the cover to the rear of the chassis. See figure 2.1.

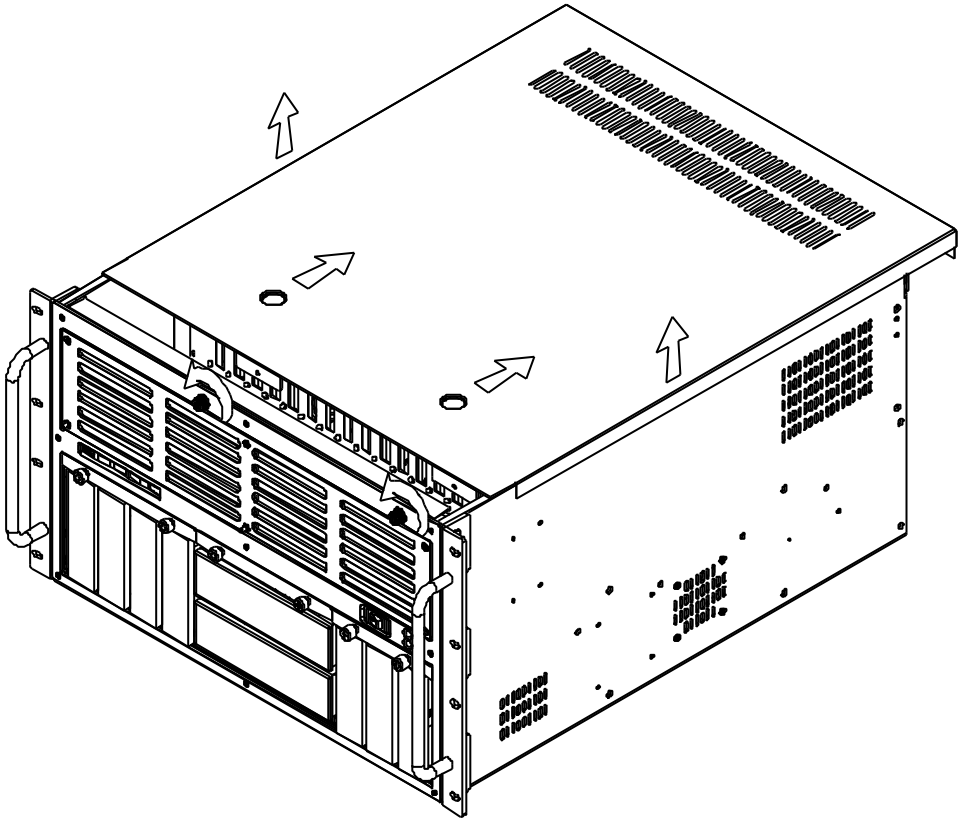


Figure 2.1

2.2 Disk Drives installation

The disk drivers are fastened inside device cages which will allow you to install and re-install the drive without removing the cover of the chassis.

1. Remove the 2 captive screws on the front of device cage.
2. Remove the device cage by slide it towards the front of the chassis.

Please refer to figure 2.2 & 2.3 for the disk drives installation.

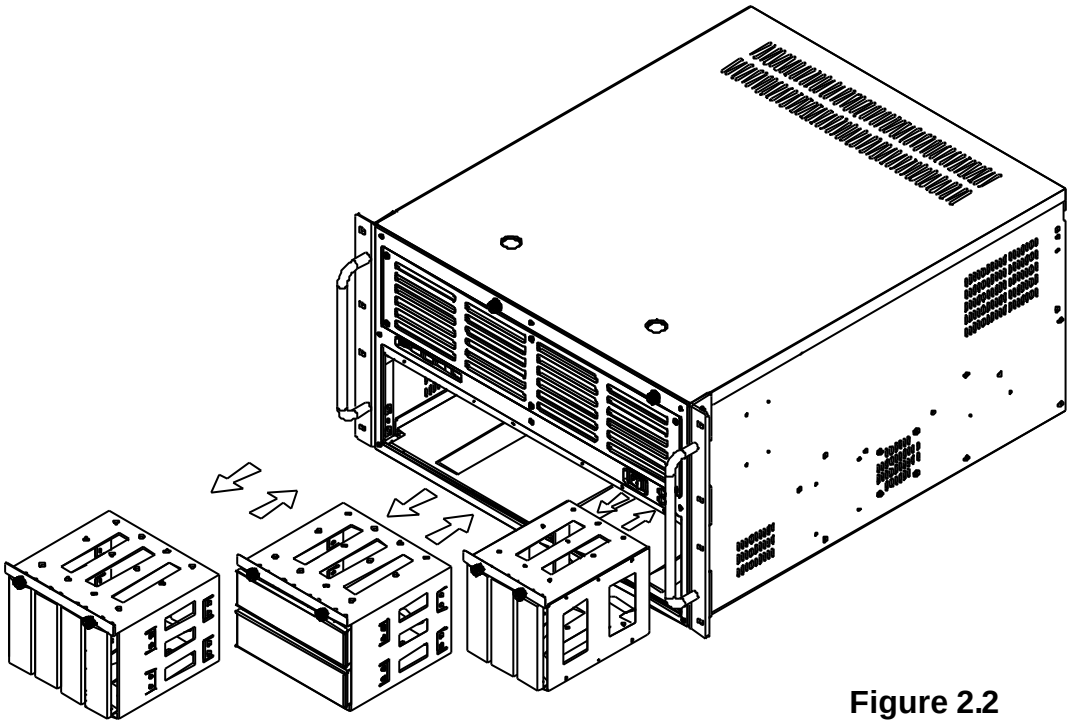


Figure 2.2

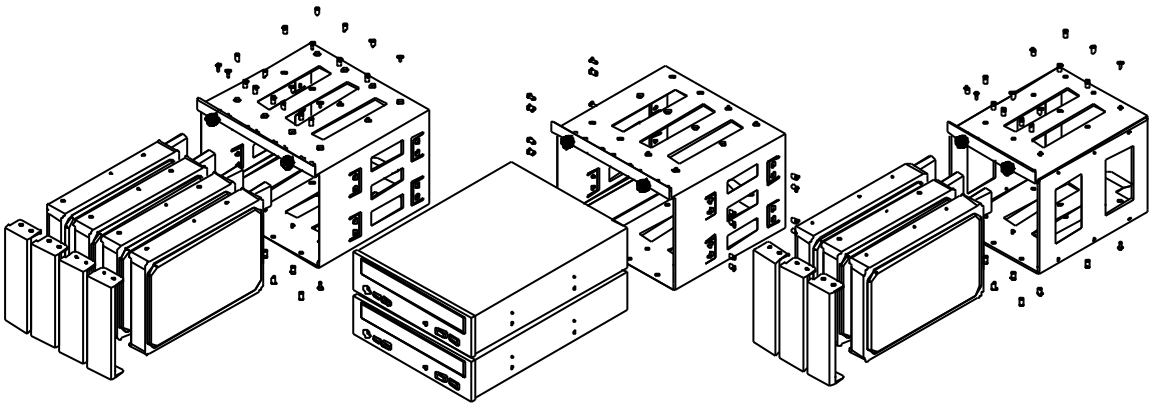


Figure 2.3

2.3 The Filter

The filter of the Rack-3030 is located at the upper side of the front panel. The filter should be removed and cleaned at least once a month to achieve optimum performance. The filter can be removed by remove 6 screws from Fan Modules. Take out the old filter, replace it with the new one if it' s already worn out. Then fasten 6 screws to put it back. (Figure 2.4)

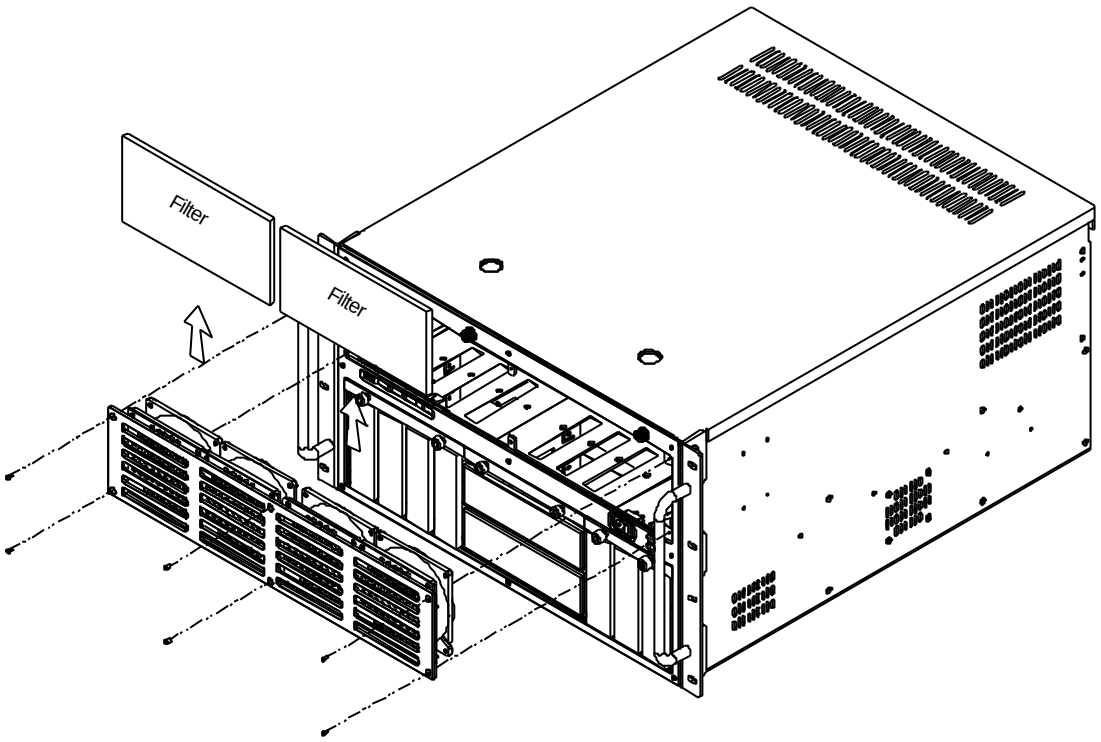


Figure 2.4

2.4 The Backplanes installation

There are variant of backplanes to be applied with the Rack-3030 depends or your demands: BP-20S, BP-20SD, BP-20ST, BP-20SQ, PCI-18SD, PCI-19S, PX-19S, PX-20S, PX-20S2.

Figure 2.5 &2.6 below illustrates how to install the backplanes on the Rack-3030.

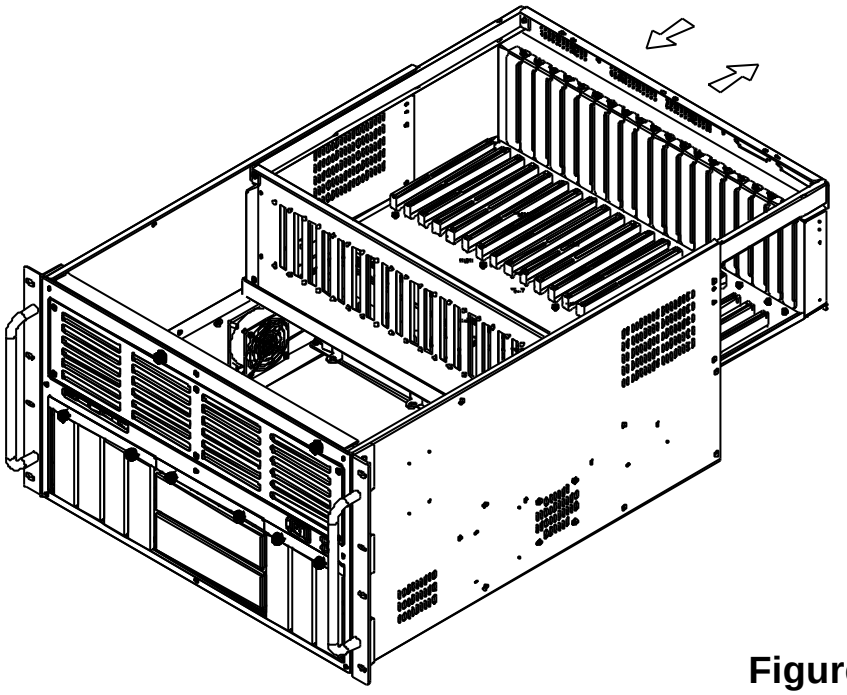


Figure 2.5

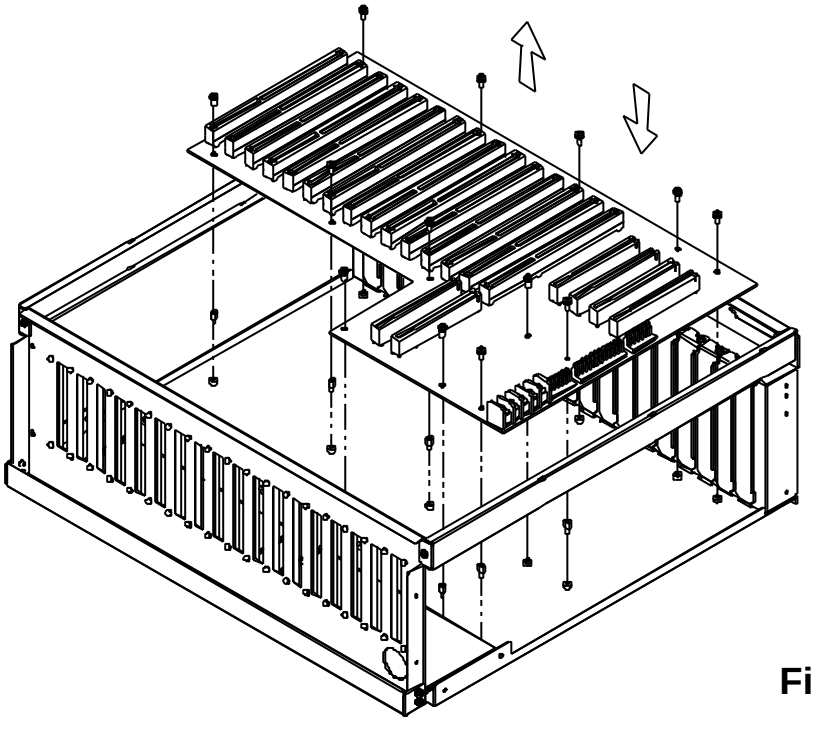


Figure 2.6

2.5 Power Supply Installation

If the Rack-3030 is installed with the Horizontal type Redundant Power Supply and you may simply install it by plug the Power unit into the case as shown in the figure 2.7 below.

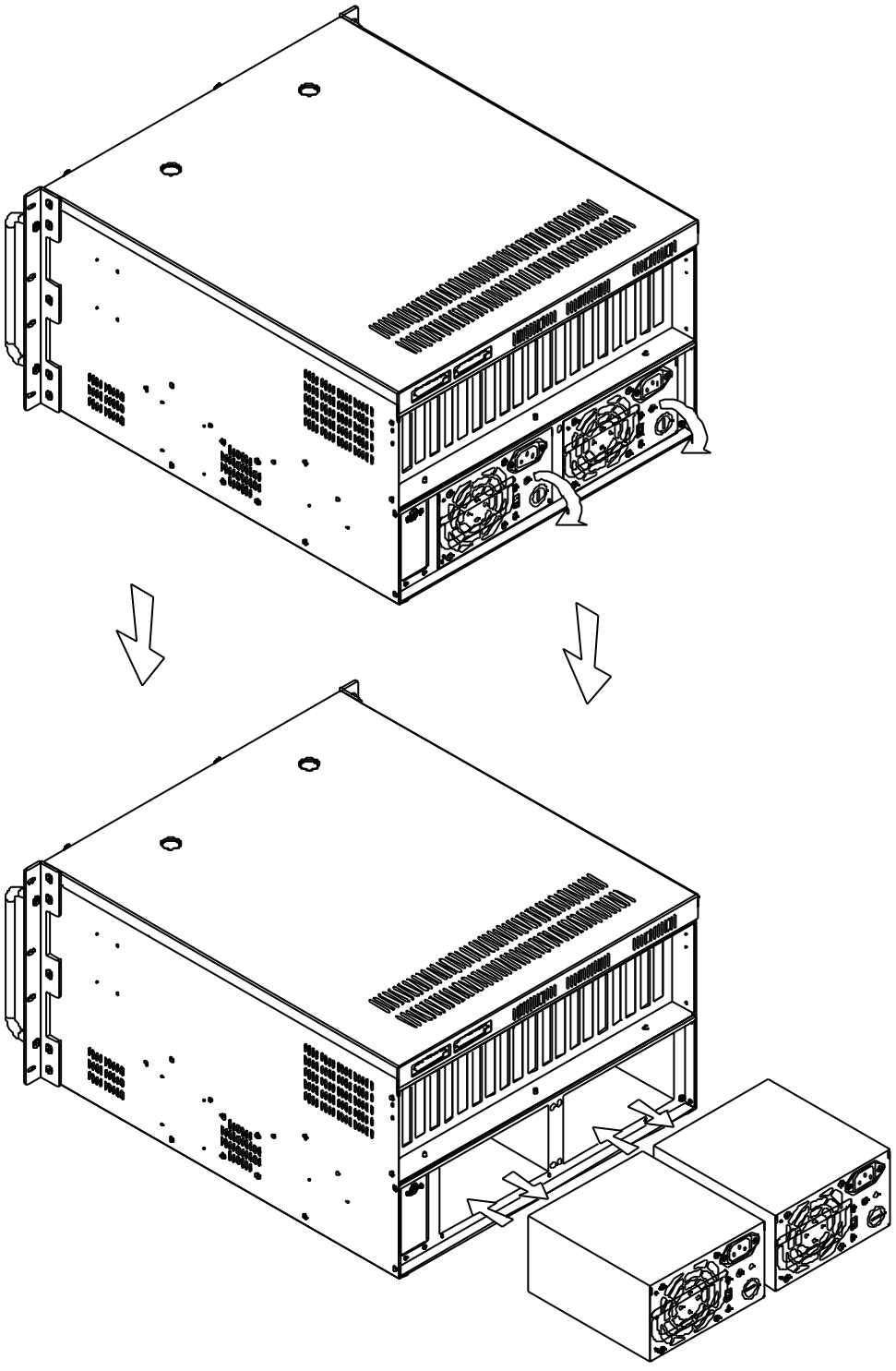


Figure 2.7

Chapter 3 Removable Fan

3.1 Introduction

The removable fan module is one of the unique features of Rack-3030 where you may remove and install the fan from the front of the chassis without opening the chassis cover. This will give you more convenient and flexibility to replace the fan if necessary.(Fig 2.4 & 3.1)

3.2 The Fan signal and Connection

Figure 3.2 below showed the fan signal and how to connect it to the cable of the control panel.

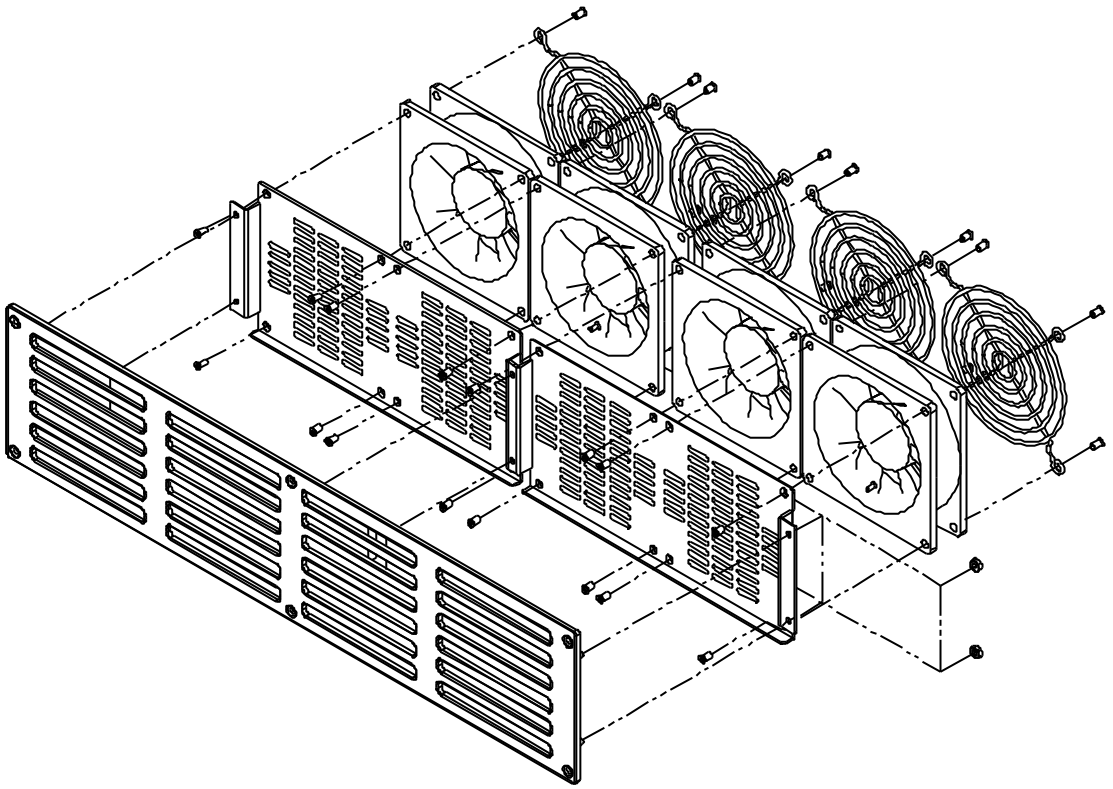


Figure 3.1

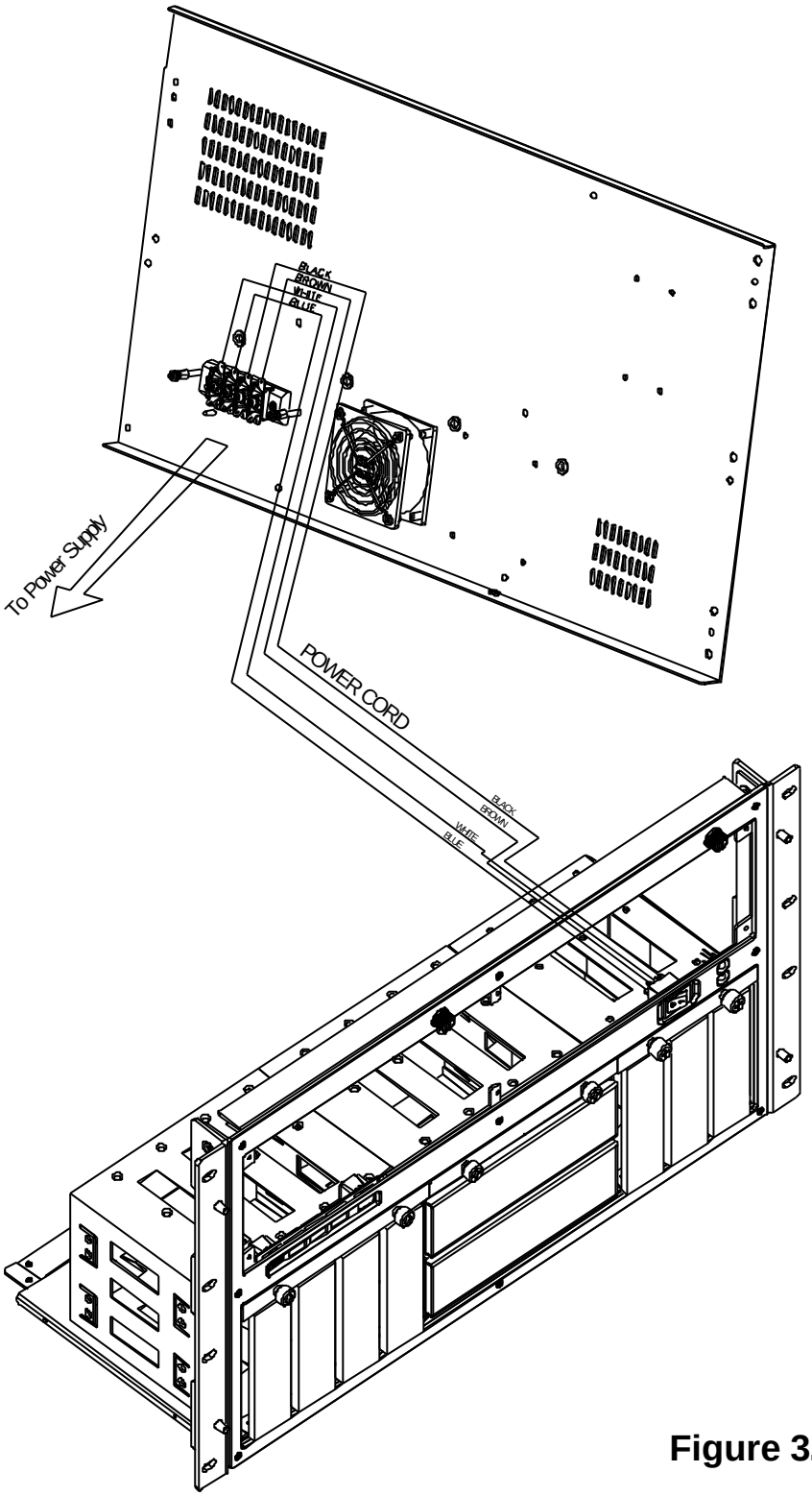

BLACK
BROWN
WHITE
BLUE
To Power Supply
POWER CORD
BLACK
BROWN
WHITE
BLUE

Figure 3.2

Chapter 4 Fault Resilient Function

4.1 Introduction

The fault resilient of Rack-3030 is a fault detection and alarm notification system. When any fail function occurs, the unit will alert the users.
RACK-3030 control panel is built up from **ALARMBOARD A60 MODULE.**

Fan sensor: FAN1、FAN2、FAN3 and FAN4
The RED LED indicator located at the front door will light if one fan failed.

Buzzer on/off button x 1: control buzzer on / off.
When the system buzzer is alarming, push the button will stop the buzzer.

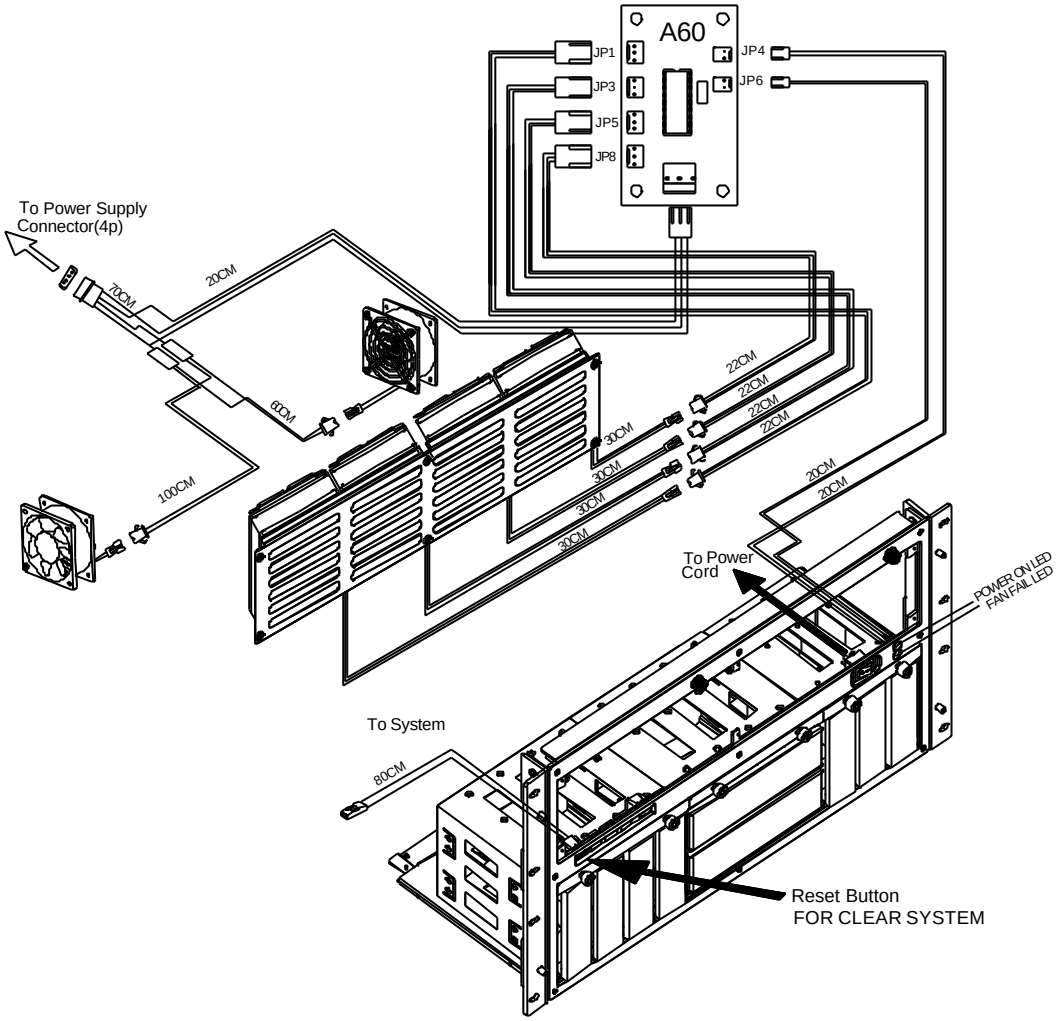
Reset button x 4: (option)
Four reset buttons are available to control individual multi system installation.

4.2 Fault Detection and Alarm Notification

The Rack-3030 the system fault conditions that will be detected are:
Fan Failure: If any of the cooling fan fails.
Power Failure: If any of the power fails.

4.3 Visible Alarm

However, the alarm indicator (LED) will stay blinking until the fault condition is solved.
The fault condition include **Fan Failure, Power Failure, the system.**


A60
JP1
JP3
JP5
JP8
JP4
JP6
To Power Supply
Connector(4p)
70CM
20CM
60CM
100CM
22CM
22CM
22CM
22CM
30CM
30CM
30CM
30CM
20CM
20CM
To Power
Cord
POWER ON LED
FAN FAIL LED
To System
80CM
Reset Button
FOR CLEAR SYSTEM

Chapter 5 Power Supply

5.1 Single Power ACE-935A

5.1.1 INPUT SPECIFICATIONS

- Input Voltage
  The range of input voltage is from 85V AC to140VAC or 170VAC to 270VAC selected by slide switch install in rear panel of the metal box.
- Input frequency
  The range of input voltage is from 47 HZ to 63 HZ
- Inrush current
  The inrush current will not exceed 15A at 115V AC input or 30A at 230V AC input cold start,25℃.

5.1.2 OUTPUT SPECIFICATIONS

- The load range

Output#	Output	min.load	rated load	peak load	Voltage accuracy
1	+5V	3.0A	40A	10A	5.00V to 5.10V
2	+12V	0.1A	8A		11.28V to 12.72V
3	-12V	0A	0.7A		-11.40V to –12.60V
4	-5V	0A	0.3A		-4.75V to –5.25V

At factory, all outputs in 50% rated load condition, the +5V output is set to between 4.90V and 5.10V.The other outputs are checked to be within the specified voltage accuracy range.

- Output power
  The total DC continuous power shall be kept within (300W).Peak load on each output can't be allowed for more then 5 sec. When the input voltage less then 90VAC,total DC continuous power should not exceed 250W.
- Ripple and noise
  The peak to peak ripple and noise for each output is less than 1% of each output voltage at rated load,115/230VAC.Measureing is done by 15MHz band width limited oscilloscope and terminated each output with a 47 uF capacitor.
- Line regulation
  The output line regulation is less than + -1% over the line range specified in paragraph 2.1

- Load regulation

  The output voltage load regulation is less than the values in the following table by changing each output load + -40% form 60% rated load, and keep all other outputs at 60% rated load.

Output#	1	+ -3%
	2	+ -5%
	3	+ -2%
	4	+ -2%

- Hold up time

  Hold up time is loger than 20ms at 115V/230V input by measuring from the last AC line charging pulse to the point than +5V drop down to +4.75V.

- Power good signal

  When power is turned on, the power good signal will go high 100ms to 500ms after all output DC voltages are within regulation limits.

- Power fail signal

  The power fail signal will go low at least 0.5ms before any of the output voltages fall below regulation limits.

5.1.3 OUTPUT PROTECTIVE FEATURES

For some reason the power supply fails to control itself, the build-in over voltage protection circuit will shut down the outputs to prevent damaging external circuits. The trip point of crowbar circuit is around 5.9V to 7.0V.The power supply will go into hiccup mode against short circuit or over load conditions, and will auto-recovery white faulty conditions are removed.

5.1.4 EFFICIENCYS

The efficiency is higher than 68% by measuring at nominal line, and rated load.

5.1.5 ENVIRONMENT SPECIFICATIONS

- Operating temperature

  0℃ to 40℃

  Use Input 104V, 244V Testing temperature.

- Storage temperature

  -40℃ to +70℃

5.1.6 INTERNATIONAL STANDARDS

- Safety standards
  Designed to meet the following standards：
  UL 1950 D3
  VDE EN 60 950
- EMI standards
  Designed to meet the following conducted & radiation Limitd：
  FCC docket 20780 curve “B”

5.2 Redundant Power ARH-6400F (For ATX)

5.2.1 Scope

This specification defines the performance characteristics of a grounded, single-phase, 400 watts, 6 output level power supply. This specification also defines world wide safety requirements and manufactures process test requirements.

5.2.2 Input requirements

- Voltage (sinusoidal)

Low range	90	132 VAC	normal	100	125 VAC
High range	180	260 VAC	normal	200	240 VAC

  A manual switch shall be provided to select the appropriate range.
- Frequency
  The input frequency range will be 47hz 63hz.
- Steady-state current
  10.0A/5.0A amps max
  (Excluding AC output current) at any low/high range input voltage.
- Inrush current
  50/100 amps @110/220 VAC (at 25 degrees ambient cold start for one power supply)

5.2.3 Output requirements

- DC load requirements

Normal	Load current		Regulation tolerance	
Output voltage	Max.	Min	Max.	Min.
+5V	20~36A	7.0A	+5%	-5%
+12V	17.0A	2.5A	+7%	-7%
-5V	0.8A	0.0A	+10%	-10%
-12V	0.8A	0.0A	+10%	-10%
+3.3V	25.0A	3.0A	+5%	-5%
+5Vsb	1A	0.1A	+5%	-5%

+5V and +3.3V total output max：180W

Remark:

When operationg with single module

1) If +5V is at high load and the other channels are at low load , the requlation tolerance of +12V will be +10%。

2) If +12V is at low load and the other channels are at high load , the requlation tolerance of +12V will be +10%。

- Regulation and protection

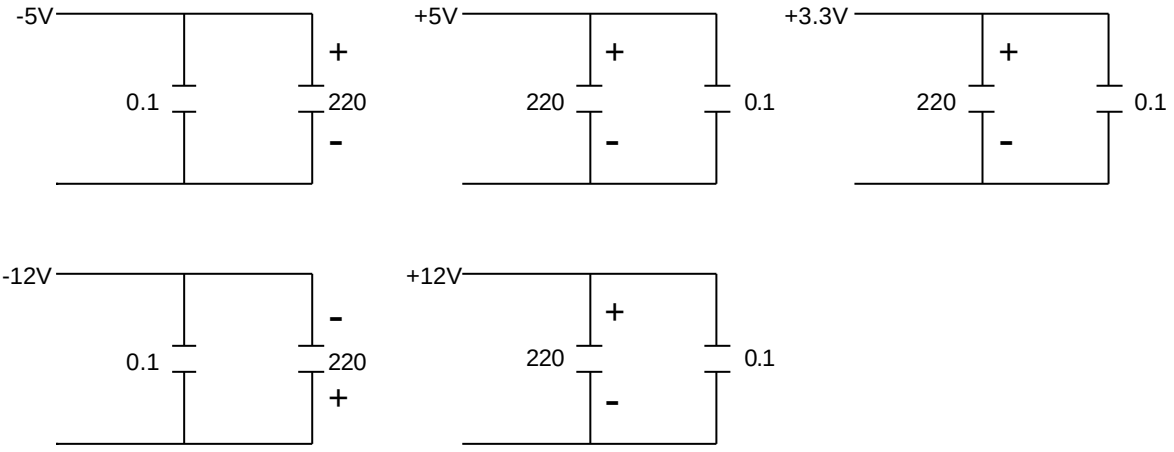
Output DC voltage	Line regulation	Load regulation	Cross regulaion
+5V	±50mV	±400mV	±350mV
-5V	±50mV	±800mV	±400mV
+12V	±50mV	±750mV	±650mV
-12V	±50mV	±800mV	±800mV
+3.3V	±50mV	±200mV	±150mV
+5Vsb	±50mV	±200mV	±150mV

- Ripple and noise

  Specification

+5V	60mV (P-P)
+12V	120mV (P-P)
-5V	120mV (P-P)
-12V	150mV (P-P)
+3.3V	60mV (P-P)
+5Vsb	50mV (P-P)

- Ripple voltage test circuit



0.1uf is ceramic the other is tantalum.

- Overshoot
  Any overshoot at turn on or turn off shall be less 15% of the nominal voltage value，all output shall be within the regulation limit of section 3.2 before issuing the power good signal of section 6.0.
- Efficiency
  Power supply efficiency typical 65% at 115V，full load.
  Power factor can not below 0.6
- Remote on/off control
  The power supply DC outputs (with the exception of +5Vsb) shall be enabled with an active-low，TTL-compatible signal("ps-on")
  When ps-on is pulled to TTL low，the DC outputs are to be enabled.
  When ps-on is pulled to TTL high or open circuited，the DC outputs are to be disabled.
  The DC output enable circuit shall be selv compliant.

5.2.4 Protection

- Input (primary)
  The input power line must have an over power protection device in accordance with safety requirement of section 9.0
- Output (secondary)
  Over power protection
  The power supply shall provide over power protection on the power supply latches all DC output into a shutdown state. Over power of this type shall cause no damage to power supply，after over load is removed and a power on/off cycle is initiated，the power supply will restart.
  Trip point total power min. 110%，max. 150%(one unit power supply)

  Over voltage protection
  If an over voltage fault occurs (internal of the power supply)，the power supply will latch all DC output into a shutdown state before when +5V output exceeds 130% of its nominal value.

  Short circuit
  A short circuit placed on any DC output to DC return shall cause no damage and power supply latch.

5.2.5 Power supply sequencing

- Power on (see fig.1)
- Hold up time

  When power shutdown DC output 5V must be maintain 16msec in regulation limit at nominal input voltage.
- Power off sequence (see fig. 1)

5.2.6 Signal requirements

- Power good signal (see fig. 1)

  The power supply shall provide a "power good" signal to reset system logic, indicate proper operation of the power supply, and give advance warning of impending loss of regulation at turn off. This signal shall be a TTL compatible up level (2.4V to 5.25V) when +5V output voltage are present and above the minimum UV sense levels specified in paragraph 6.2，or a down level (0.0V to 0.8V) when any output is below its minimum UV sense level.

  At power on，the power good signal shall have a turn on delay of at least 100ms but not greater than 500ms after the output voltages have reached their respective minimum sense levels.
- Under voltage (UV) sense levels

Output	Minimum sense voltage
+5V	+4.50V

5.2.7 Environment

- Operation

  Temperature 0 to 50 degrees centigrade
- Insulation resistance

  Primary to secondary : 30 meg. Ohm min. 500 VDC

  Primary to FG : 30 meg. Ohm min. 500VDC
- Dielectric withstanding voltage

  Primary to secondary : 1500 VAC for 1 sec.

  Primary to FG : 1500 VAC for 1 sec.
- Leakage current

  3.5 mA. max. at nominal voltage 250 VAC

5.2.8 Safety

- Underwriters laboratory (UL) recognition.

  The power supply designed to meet UL 1950.
- Canadian standards association (CUL) approval

  The power supply designed to meet CSA 1402C & CSA 950.

- TUV approval

  The power supply shall be designed to meet TUV EN-60950.

5.2.9 Reliability

- Burn in

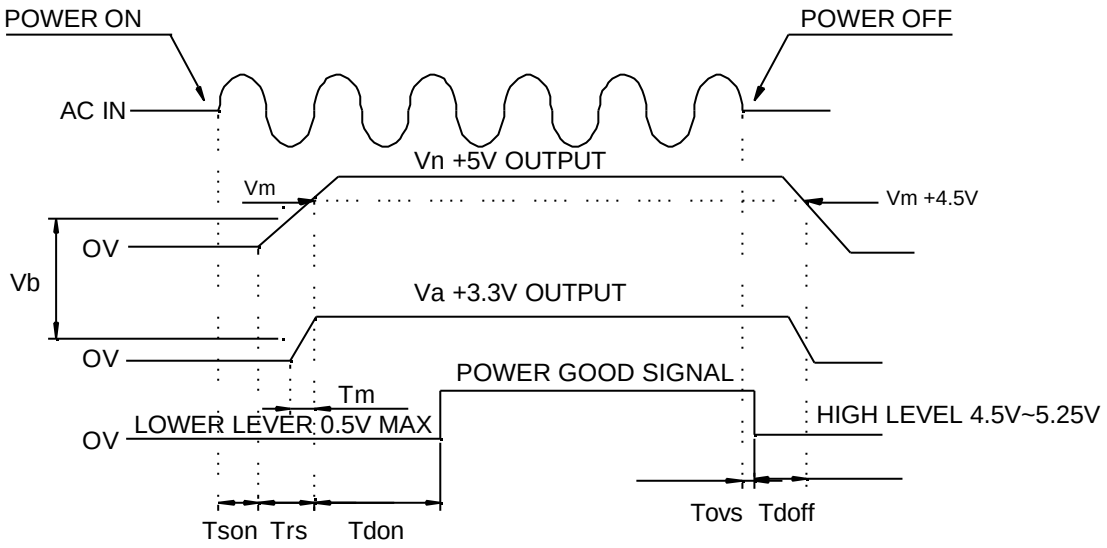
  All products shipped to customer must be burn in. The burn in shall be performed at high line voltage.

5.2.10 Mechanical requirements

- Physical dimension :190 mm * 334 mm * 95 mm
- Connector power input (DELTA 10GEEG3E) or equivalent.

5.2.11 Warning method

- Audio alarm(buzzer sund，resttl).
- Faulted.
- Power defective signal delivery(TTL，low active).



Vn	Nominal voltages +5V
Vm	Minimum voltages +4.5V
Va	Nominal voltages +3.3V
Vb	+2.0V max
Tson	Switch on time (500 ms. max.)
Trs	+5V rise time (100ms. max.)
Tdon	Delay turn-on (100ms. < Tdon < 500ms.)
Tdoff	Delay turn-off (1 ms. min.)
Toff	Hold up time (16ms. min.)
Tm	Delay time of +3.3V (1ms. min)

Figure 1

5.3 Redundant Power ARH-4400F (For AT)

5.3.1 Scope

This specification defines the performance characteristics of a grounded, single-phase, 400 watts, 6 output level power supply. This specification also defines world wide safety requirements and manufactures process test requirements.

5.3.2 Input requirements

- Voltage (sinusoidal)

Low range	90	132 VAC	normal	100	125 VAC
High range	180	260 VAC	normal	200	240 VAC

A manual switch shall be provided to select the appropriate range.

- Frequency

The input frequency range will be 47hz 63hz.

- Steady-state current

10.0A/5.0A amps max

(Excluding AC output current) at any low/high range input voltage.

- Inrush current

50/100 amps @110/220 VAC (at 25 degrees ambient cold start for one power supply)

5.3.3 Output requirements

- DC load requirements

Normal Output voltage	Load current Max.	Min	Regulation tolerance Max.	Min.
+5V	20~36A	7.0A	+5%	-5%
+12V	17.0A	2.5A	+7%	-7%
-5V	0.8A	0.0A	+10%	-10%
-12V	0.8A	0.0A	+10%	-10%

+5V and +3.3V total output max：180W

Remark:

When operationg with single module

1) If +5V is at high load and the other channels are at low load , the requlation tolerance of +12V will be +10%。

2) If +12V is at low load and the other channels are at high load , the requlation tolerance of +12V will be +10%。

- Regulation and protection

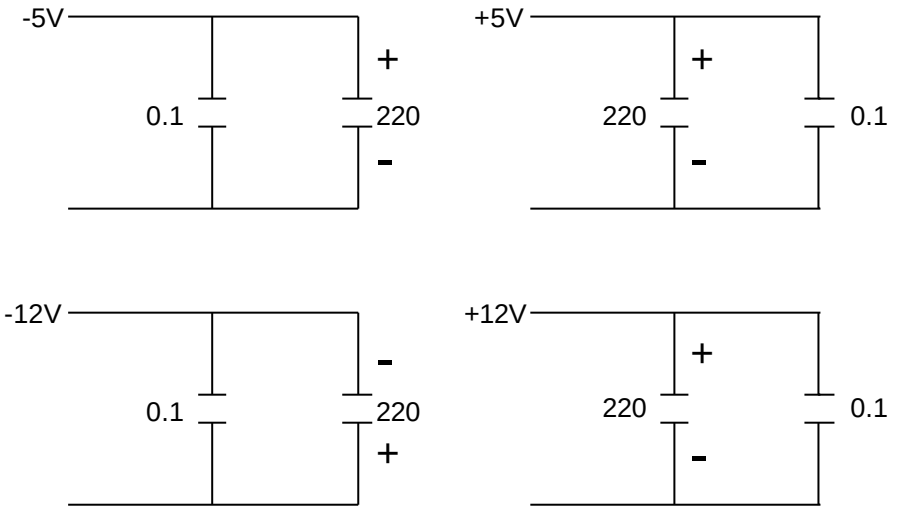
Output DC voltage	Line regulation	Load regulation	Cross regulaion
+5V	±50mV	±400mV	±350mV
-5V	±50mV	±800mV	±400mV
+12V	±50mV	±750mV	±650mV
-12V	±50mV	±800mV	±800mV

- Ripple and noise

Specification

+5V	60mV (P-P)
+12V	120mV (P-P)
-5V	120mV (P-P)
-12V	150mV (P-P)

- Ripple voltage test circuit



0.1uf is ceramic the other is tantalum.

- Overshoot

  Any overshoot at turn on or turn off shall be less 15% of the nominal voltage value，all output shall be within the regulation limit of section 3.2 before issuing the power good signal of section 6.0.

- Efficiency

  Power supply efficiency typical 65% at 115V，full load. Power factor can not below 0.6

- Remote on/off control

  The power supply DC outputs (with the exception of +5Vsb) shall be enabled with an active-low，TTL-compatible signal(“ps-on”)

  When ps-on is pulled to TTL low，the DC outputs are to be enabled.

  When ps-on is pulled to TTL high or open circuited，the DC outputs are to be disabled.

  The DC output enable circuit shall be selv compliant.

5.3.4 Protection

- Input (primary)
  The input power line must have an over power protection device in accordance with safety requirement of section 9.0
- Output (secondary)
  Over power protection
  The power supply shall provide over power protection on the power supply latches all DC output into a shutdown state. Over power of this type shall cause no damage to power supply，after over load is removed and a power on/off cycle is initiated，the power supply will restart.
  Trip point total power min. 110%，max. 150%(one unit power supply)

  Over voltage protection
  If an over voltage fault occurs (internal of the power supply)，the power supply will latch all DC output into a shutdown state before when +5V output exceeds 130% of its nominal value.

  Short circuit
  A short circuit placed on any DC output to DC return shall cause no damage and power supply latch.

5.3.5 Power supply sequencing

- Power on (see fig.1)
- Hold up time
  When power shutdown DC output 5V must be maintain 16msec in regulation limit at nominal input voltage.
- Power off sequence (see fig. 1)

5.3.6 Signal requirements

- Power good signal (see fig. 1)
  The power supply shall provide a "power good" signal to reset system logic，indicate proper operation of the power supply，and give advance warning of impending loss of regulation at turn off. This signal shall be a TTL compatible up level (2.4V to 5.25V) when +5V output voltage are present and above the minimum UV sense levels specified in paragraph 6.2，or a down level (0.0V to 0.8V) when any output is below its minimum UV sense level.
  At power on，the power good signal shall have a turn on delay of at

least 100ms but not greater than 500ms after the output voltages have reached their respective minimum sense levels.

- Under voltage (UV) sense levels

Output	Minimum sense voltage
+5V	+4.50V

5.3.7 Environment

- Operation
  Temperature 0 to 50 degrees centigrade
- Insulation resistance
  Primary to secondary : 30 meg. Ohm min. 500 VDC
  Primary to FG : 30 meg. Ohm min. 500VDC
- Dielectric withstanding voltage
  Primary to secondary : 1500 VAC for 1 sec.
  Primary to FG : 1500 VAC for 1 sec.
- Leakage current
  3.5 mA. max. at nominal voltage 250 VAC

5.3.8 Safety

- Underwriters laboratory (UL) recognition.
  The power supply designed to meet UL 1950.
- Canadian standards association (CUL) approval
  The power supply designed to meet CSA 1402C & CSA 950.
- TUV approval
  The power supply shall be designed to meet TUV EN-60950.

5.3.9 Reliability

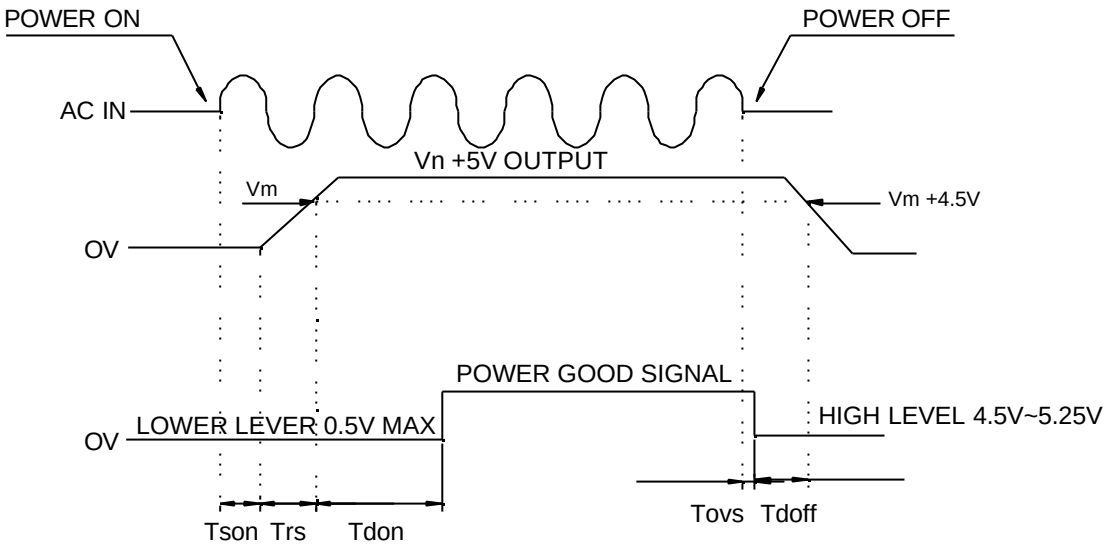
- Burn in
  All products shipped to customer must be burn in. The burn in shall be performed at high line voltage.

5.3.10 Mechanical requirements

- Physical dimension :190 mm * 334 mm * 95 mm
- Connector power input (DELTA 10GEEG3E) or equivalent.

5.3.11 Warning method

- Audio alarm(buzzer sound，resettle).
- Faulted.



Vn	Nominal voltages +5V
Vm	Minimum voltages +4.5V
Tson	Switch on time (500 ms. max.)
Trs	+5V rise time (100ms. max.)
Tdon	Delay turn-on (100ms. < Tdon < 500ms.)
Tdoff	Delay turn-off (1 ms. min.)
Toff	Hold up time (16ms. min.)

Figure 1